ELECTRONIC APPARATUS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an electronic apparatus such as a personal computer and a cellular phone.

2. Description of the Related Art

An electronic apparatus such as a laptop personal computer and a foldable cellular phone includes a main body portion and a display portion, and the main body portion and the display portion are coupled to each other so as to be openable/closable (foldable) via a hinge. Such an electronic apparatus needs to be provided with a coupling member such as a hinge having a certain axis diameter or more in order to obtain a torque to hold a position of the display portion with respect to the main body portion (see Japanese Patent Application Laid-open No. 2008-298278 (paragraph [0023] and FIGS. 1 and 2), for example; hereinafter, referred to as Patent Document 1).

Further, there has been recently known an electronic apparatus as described above, in which the main body portion and the display portion are coupled to each other via an articulated hinge in order to increase a degree of freedom in position (see Japanese Patent Application Laid-open No. 2008-228249 (paragraphs [0025] and [0034] and FIG. 7), for example; hereinafter, referred to as Patent Document 2).

In the electronic apparatus disclosed in Patent Document 2, the main body portion and the display portion are coupled by a chain mechanism in which two thin metal plates having flexibility are provided. One of the thin plates has one end that is fixed to the main body portion and the other end that is inserted into a groove portion provided to the display portion. The other thin plate has one end that is fixed to the display portion and the other end that is inserted into a groove portion provided to the main body portion. Each of the other ends of the two thin plates includes a projected portion. On the other hand, a plurality of recessed portions with which the projected portions are engaged are formed at predetermined positions of the groove portions that are provided to the main body portion and the display portion.

In the electronic apparatus, the chain mechanism is interlocked with an open/close operation of the electronic apparatus so that the two thin plates slide within the groove portions while being deformed in accordance with the interlock. When the electronic apparatus enters a predetermined open state, the projected portions provided to the thin plates are engaged with the recessed portions of the groove portions, and thus the open state in a desired position is held.

SUMMARY OF THE INVENTION

However, since the electronic apparatus of Patent Document 1 needs to obtain a torque to hold the position of the display portion with respect to the main body portion by a coupling member such as a hinge, it is difficult to couple the main body portion and the display portion using a coupling member that does not have a certain axis diameter or more.

Moreover, in the electronic apparatus of Patent Document 2, the main body portion and the display portion are coupled using the chain mechanism and the position of the display portion can be adjusted using the two thin plates as described above. In other words, the position of the display portion cannot be freely adjusted by only the chain mechanism.

In view of the circumstances as described above, there is a need for an electronic apparatus capable of freely adjusting a position of a display portion by an articulated coupling member having a small axis diameter.

According to an embodiment of the present invention, there is provided an electronic apparatus including a display portion, a main body portion, an articulated coupling mechanism, and an interlock mechanism.

The display portion includes a display screen. The main body portion is coupled to the display portion. The articulated coupling mechanism includes, at each of end portions, a plurality of coupling members each having a rotation axis and being rotatably coupled to one another in series about the rotation axis, the plurality of coupling members coupled in series having one end coupled to the main body portion side and the other end coupled to the display portion side. The interlock mechanism interlocks rotations of the plurality of coupling members with one another in the articulated coupling mechanism.

In the embodiment of the present invention, since the interlock mechanism that interlocks the rotations of the coupling members with one another in the articulated coupling mechanism is provided, a torque that is necessary for keeping a position of the display portion with respect to the main body portion can be dispersed by multiple joints, with the result that the position of the display portion can be freely adjusted by articulated coupling members having a small axis diameter.

The articulated coupling mechanism may be structured by coupling the plurality of coupling members in a zigzag manner to be arranged in two rows, and the adjacent coupling members in the rows may each include a circumferential surface along a rotation direction and an engagement portion on the circumferential surface so that the engagement portions are engaged with each other.

With this structure, the coupling members can be interlocked by the engagement of the engagement portions that are provided to the circumferential surfaces of the adjacent coupling members in the rows.

The engagement portion may have a gear structure. With this structure, the coupling members coupled to one another can be interlocked by the gear structure in which the engagement portions are engaged with one another.

The articulated coupling mechanism may be provided to constitute a pair that are away from each other in a width direction of the main body portion. With this structure, the display portion and the main body portion can be reliably coupled by the articulated coupling mechanism constituting the pair.

The electronic apparatus may further include a plurality of second coupling members that are provided coaxially with the rotation axes of the articulated coupling mechanism constituting the pair and couple the pair of the articulated coupling mechanism to each other. With this structure, it is possible to reinforce the articulated coupling mechanism constituting the pair and also improve the design of the articulated coupling mechanism.

According to the electronic apparatus of the embodiment of the present invention, it is possible to freely adjust a position of a display portion by articulated coupling members having a small axis diameter.

These and other objects, features and advantages of the present invention will become more apparent in light of the following detailed description of best mode embodiments thereof, as illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF DRAWINGS

FIG. **1** is a perspective view showing an open state of an electronic apparatus according to an embodiment of the present invention;